

**A forceps used for the surgical reduction of fractured facial bones**

The present patent application relates to a forceps used for the surgical reduction of fractured facial bones.

Osteosynthesis systems are frequently used in maxillo-facial traumatology and orthopaedic surgery of maxillary bones, since they guarantee the perfect stability of stumps or fractured bone fragments. In particular, the use of metal plates to be fixed to stumps or fractured bone fragments with surgical screws is very diffused.

As a matter of fact, these plates are considered as the most suitable containment instruments to ensure the stability of bone fragments, which is an essential condition for the formation of callus.

Before fixing the surgical plates, however, it is necessary to carry out the surgical reduction of fractured bone segments, in order to restore their continuity.

Only after reduction the bone segments will be able to consolidate correctly from the physiological and functional viewpoint through the use of metal plates.

It must be noted that the instruments that are currently used for the surgical reduction of facial bone segments cannot be considered as fully satisfactory. Although they guarantee good functional efficiency, they are impaired by the fact that they require extremely long surgical time.

In particular, these instruments are represented by the so-called "metal splints" designed for application on dental arches as reduction-containment means.

This consolidated technology provides for the application of metal

arches joined with metal wires to each tooth on dental arches. Reduction is therefore obtained by applying elastic traction or a block with metal wires between two metal arches (the aforementioned splints).

This allows for obtaining the reduction of fractured segments and, in  
5 mandibular fractures, a dental articulation (occlusion) compatible with the pre-existing anatomy.

As mentioned earlier, the execution of this technology on patients is an extremely long operation, and it takes approximately 30/60 minutes: firstly, the splints must be installed and then removed from the patient's  
10 mouth, after fixing the metal plates to the bone segments.

The purpose of the present invention is to develop an alternative technology to the use of traditional metal splints. In this perspective the artefact according to the present invention has been developed, which is capable of ensuring the same reduction-containment as the splints, while  
15 allowing for simpler and faster installation.

More precisely, the new artefact consists in an elastic forceps with simple structure made of suitable shaped metal rod.

Apart from easy assembling, the new forceps provides good visibility of the surgical field and ensures the ergonomics of the surgical intervention.

Another advantage of the artefact according to the present invention  
20 is represented by indefinite duration, since it can be repeatedly used, after sterilisation in autoclave.

For major clarity the description of the present invention continues with reference to the enclosed drawing, which is intended for purposes of  
25 illustration and not in a limiting sense, whereby:

- fig. 1 is a side view of the forceps according to the present invention;
- fig. 2 is a top view of figure 1;
- fig. 3 is an axonometric representation of the application of two forceps on a human skull.

The forceps (1) according to the present invention comprises shaped  
30 branches (2) diverging from opposite sides starting from a central elastic loop (3).

Each branch (2) develops on three Cartesian axis and has a first

rectilinear section (2a) joined to a second section with 90° orientation (2b) laying on the same plane that contains the loop (3); it being provided that the second section (2b) has a groove (2c).

5 The second section (2b) of each branch (2) is in turn joined with a 90° ending section (2d), whose end (2e) is slightly bent towards the central loop (3).

The two bent ends (2e) of the branches (2a) of the forceps (1) are designed to be inserted and held into suitable holes previously drilled on the bone segments to be reduced, as shown in fig. 3.

10 In particular, the holes designed to act as connection points for the bent ends (2e) of the branches (2) are drilled on bone segments with a distance slightly higher than the distance between the bent ends (2e) when the forceps (1) is in idle state.

15 This allows for "stretching" the elastic structure of the forceps (1) when the forceps (1) is hooked to the holes, in order to guarantee stable fixing and most of all to hold firmly the bone segments one against the other.

20 The grooves (2c) on the branches (2) of the forceps (1) are designed to act as housings for a wire used to ensure stable fixing of the branches (2) in order to prevent the risk of accidental divarication of the branches (2), thus releasing the entire forceps (1) from its operational position.